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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10,063,869	05.21.2002	Chihiro Araki	SIMTEK6349	2434

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EXAMINER

NGUYEN, TRUNG Q

ART UNIT PAPER NUMBER

2829

DATE MAILED: 02/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,869

Applicant(s)

ARAKI, CHIHIRO

Examiner

Trung Q Nguyen

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 21 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-3 and 6 is/are rejected.
- 7) ☐ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Spence et al. (U.S. 5,440,566).

As to claims 1-2, Spence et al. disclose in Figure 1 an inspection method for a semiconductor circuit with a plurality of connected semiconductor devices 11-18, comprising the steps of applying an electrical load 10 and 11a on the circuit 11, taking a photograph of the circuit via image processor 14 with a thermo-graphic camera 13 to detect heat development (column 3, lines 21-34) of each semiconductor device in response to the applied load 10, and determining the quality of the circuit and semiconductor devices based on the heat development (column 4, lines 48-65).

As to claim 2, Spence et al. disclose in Figure 1 at least some of the semiconductor devices are connected in parallel.

As to claim 3, Spence et al. disclose in line 65 of column 5 to line 48 of column 6 temperature of the semiconductor devices are measured at different points (Xo, Yo),

(Xn, Yn) of time, and the quality of the circuit and semiconductor device is determined based on the temperature difference.

As to claim 6, Spence et al. disclose in Figure 1 an inspection apparatus for a workpiece consisting of a semiconductor circuit with a plurality of connected semiconductors 11-18 comprising an apparatus body 11 on which a workpiece to be inspected is set, a loading circuit 11a for applying load corresponding to the condition of use to the workpiece 11, a power source 11d for supplying a working current to the workpiece through said loading circuit 11a, a drive waveform generating circuit via monitor and input 18 for applying drive signal to said workpiece, a thermo-graphic camera 13 for taking photographs of the workpiece set 10 on apparatus body 11, an image processor 14 connected to thermo-graphic camera 13 and a control 15 for controlling inspection apparatus to perform an inspection program.

Allowable Subject Matter

3. Claims 4-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: claim 4 recites, inter alia, "an inspection method for a semiconductor circuit having the temperatures of the semiconductor devices are measured at different points of time at least twice to detect the heat development characteristic of each


semiconductor device, this will advantage for any device whose solder joint has voids, has a more significant tendency of temperature rise in a temperature profile of upwardly convex shape when a drive signal is applied. Therefore, if temperatures are measured at different points of time more then twice, a general temperature profile can be obtained, and a device having a defective joint due to voids can be determined.

The art of record does not disclose the above limitations, nor would it be obvious to modify the art of record so as to include the above limitations.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Nguyen whose telephone number is 703-305-4925. The examiner can normally be reached on Monday through Friday, 8:30AM – 5:00PM. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-5841. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cuneo Kammie can be reached at (703) 308-1233.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.


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TN
January 24, 2003